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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,699	07/15/2003	Masaya Tamaru	0649-0900P	4919
2292	7590	10/02/2007	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH			YODER III, CRISS S	
PO BOX 747			ART UNIT	PAPER NUMBER
FALLS CHURCH, VA 22040-0747			2622	
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)
	10/618,699	TAMARU ET AL.
	Examiner	Art Unit
	Chriss S. Yoder, III	2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 04 September 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-3 and 7-9 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3 and 7-9 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 July 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date, _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 4, 2007 has been entered.

Response to Arguments

Applicant's arguments filed September 4, 2007 have been fully considered but they are not persuasive.

1. Applicant argues, that Serizawa and Skow do not teach or suggest performing photometry where the aperture and electronic shutter speed are not changed, and that each of the references rely upon changing the exposure levels which rely upon aperture and shutter speed changes.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

With respect to the rejection of claim 1, Serizawa was relied upon to teach the use of an image signal being used to calculate an exposure value using two images having different sensitivity levels, and Jones was relied upon to modify Serizawa in claim 1, so as to provide high and low sensitivity pixels picking up different exposure levels within the same image in order to capture a single image instead of two, thereby reducing the amount of memory needed and to reduce the effects of changes in the scene that occur between capturing the two images (Jones: column 1, lines 52-65).

With respect to the rejection of claims 2-3, Skow was relied upon to teach the use of an image signal being used to calculate an exposure value, and Jones was relied upon to modify Skow in claims 2-3, so as to provide high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup in order to capture a single image having a high dynamic range so that all areas of the image, including light areas and dark areas are captured sufficiently (Jones: column 1, lines 28-40).

2. Applicant also argues, that Jones fails to remedy the deficiencies of Serizawa and Skow. However, the Examiner notes that Jones discloses capturing a single image using an image sensor having both high and low sensitivity pixels in order to reduce the amount of memory needed and the effects of changes in the scene that occur between capturing the two images, as well as expand the dynamic range such that all areas of the image, including light areas and dark areas are captured sufficiently (Jones: column 2, lines 5-21), and the simultaneous capture of both high and low sensitivity pixels is

considered to capture the image without changing the aperture and electronic shutter speed, as can be seen in column 4, lines 22-35.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al (US Patent # 6,593,970) in view of Jones (US Patent # 6,924,841).

3. In regard to **claim 1**, note Serizawa discloses the use of an image pickup apparatus, comprising a solid-state image pickup device having pixels (column 8, lines 12-20 and figure 1: 1010), control means for calculating an exposure value based on values of signal detected by said pixels, which are output from said solid-state image pickup device (column 8, lines 41-67), and signal processing means for reading data of an image picked up by said solid-state image pickup device and processing according to the exposure value (column 8, lines 41-67).

Therefore, it can be seen that the Serizawa device lacks the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup, wherein a photometric characteristic of an output of the high-sensitivity pixels being different from that of the low-sensitivity pixels, and that the exposure value is calculated based on values of signal detected by the high-sensitivity pixels and values of signal detected

by the low-sensitivity pixels in a single instance of photometry, where during each photometry, aperture and electronic shutter speed are not changed.

In analogous art, Jones discloses the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup, wherein a photometric characteristic of an output of the high-sensitivity pixels being different from that of the low-sensitivity pixels (column 4, lines 3-35, high and low sensitivity pixels are inherently different in photometric characteristic), that are used to capture a single image during a period in which the aperture and electronic shutter speed are not changed (column 4, lines 22-35, the simultaneous capture of both high and low sensitivity pixels is considered to capture the image without changing the aperture and electronic shutter speed). And by combining this with the Serizawa device, the exposure value is calculated based on an image signal having values of signal detected by the high-sensitivity pixels and values of signal detected by the low-sensitivity pixels, that is captured during a period in which the aperture and electronic shutter speed are not changed. Jones teaches that the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup is preferred in order to capture a single image instead of two, thereby reducing the amount of memory needed and to reduce the effects of changes in the scene that occur between capturing the two images (column 1, lines 52-65). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Serizawa device to include the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup in order to capture a single image instead of two, thereby reducing the amount of memory needed and to reduce the

effects of changes in the scene that occur between capturing the two images, as suggested by Jones.

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skow (US PGPub # 20030184659) in view of Jones (US Patent # 6,924,841).

4. In regard to **claim 2**, note Skow discloses the use of an image pickup apparatus, comprising an image pickup means for picking up a subject image (paragraph 0016), received light quantity detecting means having pixels (paragraph 0016, the pixels of the sensor), and control means for calculating an exposure value based on signal showing received light quantity detected by said pixels, which are output from said received light quantity detecting means, and controlling said image pickup means to pick up a subject image according to the exposure value (paragraphs 0022-0024).

Therefore, it can be seen that the Skow device lacks the use of high-sensitivity pixels and low-sensitivity pixels forming the light quantity detecting means, wherein a photometric characteristic of an output of the high-sensitivity pixels being different from that of the low-sensitivity pixels, and that the exposure value is calculated based on values of signal detected by the high-sensitivity pixels and values of signal detected by the low-sensitivity pixels in a single instance of photometry, where during each photometry, aperture and electronic shutter speed are not changed.

In analogous art, Jones discloses the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup, wherein a photometric characteristic of an output of the high-sensitivity pixels being different from that of the

low-sensitivity pixels (column 4, lines 3-35, high and low sensitivity pixels are inherently different in photometric characteristic), that are used to capture a single image during a period in which the aperture and electronic shutter speed are not changed (column 4, lines 22-35, the simultaneous capture of both high and low sensitivity pixels is considered to capture the image without changing the aperture and electronic shutter speed). And by combining this with the Skow device, the exposure value is calculated based on an image signal having values of signal detected by the high-sensitivity pixels and values of signal detected by the low-sensitivity pixels, that is captured during a period in which the aperture and electronic shutter speed are not changed. Jones teaches that the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup is preferred in order to capture an image having a high dynamic range so that all areas of the image, including light areas and dark areas are captured sufficiently (column 1, lines 28-40). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Skow device to include the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup in order to capture a single image having a high dynamic range so that all areas of the image, including light areas and dark areas are captured sufficiently, as suggested by Jones.

5. In regard to **claim 3**, note Skow discloses the use of a photometer which calculates an exposure value of the image pickup apparatus, comprising received light quantity detecting means having pixels (paragraph 0016) and calculating means for calculating the exposure value based on signal showing received light quantity detected

by said pixels, which are output from the received light quantity detecting means in a single instance of photometry (paragraph 0024).

Therefore, it can be seen that the Skow device lacks the use of high-sensitivity pixels and low-sensitivity pixels forming the light quantity detecting means, wherein a photometric characteristic of an output of the high-sensitivity pixels being different from that of the low-sensitivity pixels, and that the exposure value is calculated based on values of signal detected by the high-sensitivity pixels and values of signal detected by the low-sensitivity pixels, in a single instance of photometry, where during each photometry, aperture and electronic shutter speed are not changed.

In analogous art, Jones discloses the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup, wherein a photometric characteristic of an output of the high-sensitivity pixels being different from that of the low-sensitivity pixels (column 4, lines 3-35, high and low sensitivity pixels are inherently different in photometric characteristic), that are used to capture a single image during a period in which the aperture and electronic shutter speed are not changed (column 4, lines 22-35, the simultaneous capture of both high and low sensitivity pixels is considered to capture the image without changing the aperture and electronic shutter speed). And by combining this with the Skow device, the exposure value is calculated based on an image signal having values of signal detected by the high-sensitivity pixels and values of signal detected by the low-sensitivity pixels, that is that is captured during a period in which the aperture and electronic shutter speed are not changed. Jones teaches that the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-

state image pickup is preferred in order to capture an image having a high dynamic range so that all areas of the image, including light areas and dark areas are captured sufficiently (column 1, lines 28-40). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Skow device to include the use of high-sensitivity pixels and low-sensitivity pixels forming the solid-state image pickup in order to capture a single image having a high dynamic range so that all areas of the image, including light areas and dark areas are captured sufficiently, as suggested by Jones.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Serizawa et al (US Patent # 6,593,970) in view of Jones (US Patent # 6,924,841), and further in view of Park (US Patent # 5,714,753).

6. In regard to claim 7, note the primary reference of Serizawa in view of Jones discloses the use of an image pickup apparatus, as discussed with respect to claim 1 above. Therefore, it can be seen that the primary reference of Serizawa in view of Jones fails to disclose that each pixel includes a high-sensitivity pixel and a low-sensitivity pixel.

In analogous art, Park discloses the use of pixels that include both a high-sensitivity pixel and a low-sensitivity pixel (column 2, lines 45-48 and figure 3: 22 and 24). Park teaches that the use of both a high-sensitivity pixel and a low-sensitivity pixel in a single pixel is preferred in order to widen the dynamic range and prevent the total amount of signal from exceeding saturation levels (column 3, line 45 – column 4, line 20). Therefore, it would have been obvious to one of ordinary skill in the art to modify

the primary device of Serizawa in view of Jones to include both a high-sensitivity pixel and a low-sensitivity pixel in each pixel in order to widen the dynamic range and prevent the total amount of signal from exceeding saturation levels, as suggested by Park.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skow (US PGPub # 20030184659) in view of Jones (US Patent # 6,924,841), and further in view of Park (US Patent # 5,714,753).

7. In regard to **claim 8**, note the primary reference of Skow in view of Jones discloses the use of an image pickup apparatus, as discussed with respect to claim 2 above. Therefore, it can be seen that the primary reference of Skow in view of Jones fails to disclose that each pixel includes a high-sensitivity pixel and a low-sensitivity pixel.

In analogous art, Park discloses the use of pixels that include both a high-sensitivity pixel and a low-sensitivity pixel (column 2, lines 45-48 and figure 3: 22 and 24). Park teaches that the use of both a high-sensitivity pixel and a low-sensitivity pixel in a single pixel is preferred in order to widen the dynamic range and prevent the total amount of signal from exceeding saturation levels (column 3, line 45 – column 4, line 20). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device of Skow in view of Jones to include both a high-sensitivity pixel and a low-sensitivity pixel in each pixel in order to widen the dynamic range and prevent the total amount of signal from exceeding saturation levels, as suggested by Park.

8. In regard to **claim 9**, note the primary reference of Skow in view of Jones discloses the use of a photometer which calculates an exposure value of the image pickup apparatus, as discussed with respect to claim 3 above. Therefore, it can be seen that the primary reference of Skow in view of Jones fails to disclose that each pixel includes a high-sensitivity pixel and a low-sensitivity pixel.

In analogous art, Park discloses the use of pixels that include both a high-sensitivity pixel and a low-sensitivity pixel (column 2, lines 45-48 and figure 3: 22 and 24). Park teaches that the use of both a high-sensitivity pixel and a low-sensitivity pixel in a single pixel is preferred in order to widen the dynamic range and prevent the total amount of signal from exceeding saturation levels (column 3, line 45 – column 4, line 20). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device of Skow in view of Jones to include both a high-sensitivity pixel and a low-sensitivity pixel in each pixel in order to widen the dynamic range and prevent the total amount of signal from exceeding saturation levels, as suggested by Park.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

“A High Dynamic Range CMOS APS Image Sensor”: note the use of pixels having a high and low sensitivity region.

US006809768B1: note the use of pixels having a high and low sensitivity region.

US006909461B1: note the use of pixels having a high and low sensitivity region.

US006873442B1: note the use of pixels having a high and low sensitivity region.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chriss S. Yoder, III whose telephone number is (571) 272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CSY
September 11, 2007



TUAN HO
PRIMARY EXAMINER